Kansas Department of Health and Environment
2015 Emissions Inventory and Fee Form for Class I Sources

1. Source Information

Source Name:	Source ID:
Source Street Address:	
City:	State:	Zip:
Source Mailing Address:	
City:	State:	Zip:
NAICS:	SIC code:	EPA TRI I.D.#:

2. Mailing address for fee forms and correspondence.
(Address may be left blank if same as listed in item 1.)

Contact Name:	
Company Name:	
Mailing Address:	
City:	State:	Zip:
Telephone #:	FAX #:
E-mail:	

This completed form must be signed by a responsible official representing the owner or operator of the source. Emissions inventory information that is not confidential under the Kansas Open Records Act (K.S.A. 45-215 et seq) and K.S.A. 65-3015 may be made available to the public. I hereby certify that the information and statements contained in these documents are true, accurate and complete. I am aware that knowingly making a false statement or misrepresenting the facts presented in these documents is a violation of state law.

Name:	Telephone:

Signature:	Date:

Fully complete this form and worksheets used in the 2015 calendar year emissions inventory and fee calculation with the annual emissions fee payment and return by April 1, 2016 to:

Kansas Department of Health and Environment
Bureau of Air
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366
Attn: Barb Bangert

If you have questions about emission factors or calculations, please contact Barb Bangert at (785) 296-1582.

Source ID Number: _____

Air Emissions Source Operating Information

Enter a unique point identification (ID) number, which will be used to identify these specific emissions throughout the emissions calculation procedure.

Point ID Number	Briefly describe the process or operation associated with this point ID number. Include model or serial number, horsepower, etc. as applicable. Please list __EACH__ operating unit individually.

Annual Operating Rate. Enter the applicable 8-digit Source Classification Code(s) (SCC) for this process or operation. In some cases, an SCC ID number will be necessary as an additional identifier. For example, two SCC ID numbers should be used for a boiler burning 1.5% sulfur coal and 0.6% sulfur coal, even though the same SCC is used. Enter the stack ID number from worksheet 2 that the process or operation is associated with. If the process or operation is not vented to a stack or the stack doesn't meet the emissions criteria specified at the top of worksheet 2, enter "NA" for the stack ID field. Enter the annual operating rate and the units of measurement of the annual operating rate.

SCC(s)	SCC ID # (1)	Stack ID # (2)	Annual Operating Rate	Units of Measurement of Annual Operating Rate	Internal Use Only

(1) Please begin assigning 2-digit SCC ID numbers with 01, 02, 03, etc. for each point ID number.
(2) Please begin assigning 2-digit stack ID numbers with 01, 02, 03, etc. Each stack ID number should be used only once for a facility (i.e., every stack should have a unique stack ID number) and be entered on worksheet 2.

Operating Schedule. For this process or operation, enter a typical start time along with the typical hours per day, days per week and weeks per year in operation. Be sure to note whether the start time is a.m. or p.m. Facilities that operate 24/7 should enter 12:00 a.m. or midnight for typical start time.

Typical Start Time: [   ]   Hours/Day: [   ]   Days/Week: [   ]   Weeks/Year: [   ]

Seasonal Throughput. For this process or operation, enter the percent of the operating rate for 2015 as a portion of the whole year. The total of the four quarters should equal 100%. Note that Dec-Feb is December, January and February of the same calendar year (2015), which are not consecutive months.

Dec-Feb: [   ] %   Mar-May: [   ] %   June-Aug: [   ] %   Sept-Nov: [   ] %

Stack Information

This worksheet is for reporting all stacks associated with combustion units or with actual emissions greater than or equal to 20 tons/year NO_x, 5 tons/year SO_x or 5 tons/year PM_{10}. If your facility has no stacks or has no stacks that meet this criteria, skip this worksheet.

Enter the stack information for stacks at your facility that vent emissions from the process or operations listed on worksheet 1. Identify each stack using the point ID and stack ID numbers from worksheet 1. Diameter represents the inside diameter of the top of a circular stack. For non-circular stacks, calculate an equivalent diameter as $d = (1.274 * A)^{1/2}$, where A is the cross-sectional area in square feet. If the exhaust is discharged at ambient temperature, enter 77^0 F for the exit temperature. Note that the flow rate should be reported as acfm (e.g., calculated at the actual operating temperatures).

Stack ID Number*	Stack Description	Height (ft)	Diameter (ft)	Flow Rate (actual ft^3/min)	Exit Temperature (^{0} F)	Velocity (ft/sec)	Internal Use Only

* Reference the stack ID numbers from worksheet 1. Each stack ID number should be used only once for a facility, i.e., every stack should have a unique stack ID number.

Emission Factor Method Calculation Form - Criteria Pollutants*

This worksheet is for calculating criteria pollutant emissions using emission factors. If you are not using emission factors to calculate criteria pollutant emissions, skip this worksheet. If you are using an AP-42 emission factor for ash- or sulfur-containing fuels, complete worksheet 4, and transfer the calculated emission factors from column I on that worksheet to column C on this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

For all criteria pollutants that apply in column A, enter the source of the emission factor in column B and the emission factor in column C. Each emission factor should be in units of pounds per unit of measurement. Transfer the operating rate from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E $E = C \times D$	Column F $F = E/2,000$	Column G	Column H $H = F \times G$	
Criteria Pollutant	Emission Factor Origin (If use AP-42 list table number)	Emission Factor (lbs per unit of measurement)	Operating Rate (in units of measurement)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)	Internal Use Only
NO_x								
VOC								
PM_{10}-FIL								
$PM_{2.5}$-FIL								
PM-CON								
NH_3								
SO_x								
CO								

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, $PM_{10\text{-FIL}}$, $PM_{2.5\text{-FIL}}$, PM-CON, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Guideline for Emission Factor Calculation for Ash- or Sulfur-Containing Fuels When Using AP-42 Emission Factors

This worksheet is designed to help calculate emission factors for ash- or sulfur-containing fuels when using emission factors from AP-42. If this worksheet is applicable, it should be used in conjunction with worksheet 3. Skip this worksheet if it is not applicable.

Enter the point ID number, SCC ID number, and SCC code from worksheet 1 in columns A, B and C. Enter the pollutant in column D and the emission factor formula in column E. Enter the units of measurement of the emission factor, and percent by weight of fuel of ash or sulfur in columns F, G and H. Using the formula in column E, and/or ash content from column G, and/or sulfur content from column H, calculate the emission factor and enter in column I. An example calculation is included below.

Transfer the calculated emission factor(s) in column I to column C on worksheet 3.

Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I
Point ID Number	SCC ID Number	SCC	Pollutant	Emission Factor Formula	Emission Factor Units	Ash % by Weight of Fuel	Sulfur % by Weight of Fuel	Emission Factor (lb pollutant/ unit)

Example: Calculating PM and SO$_2$ Emission Factors for Bituminous Coal, Pulverized Dry Bottom Boiler

Fuel Analysis: 2.5 Sulfur, % by weight
                              11.3 Ash, % by weight

SCC	Pollutant	Emission Factor Formula	Emission Factor Units	Ash % by Weight of Fuel	Sulfur % by Weight of Fuel	Emission Factor (lb pollutant/ unit)
10100202	PM$_{2.5}$-FIL	.6A	lb/tons burned	11.3		6.8
10100202	PM$_{10}$-FIL	2.3A	lb/tons burned	11.3		25.99
10100202	PM-CON	(.1S-.03)26	lb/tons burned		2.5	5.7
10100202	SO2	38*S	lb/tons burned	11.3	2.5	95.0

* Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume 1, Chapter 1 External Combustion Sources, Section 1.1 Bituminous and Subbituminous Coal Combustion, September 1998. SO$_2$ factor is from Table 1.1-3, and PM$_{10}$-FIL factor is from Table 1.1-4. PM2.5-FIL factor is from *Webfire*. PM-CON factor is from Table 1.1-5. Available via Internet at: http://www.epa.gov/ttn/chief/ap42/index.html.

Material Balance Method Calculation Form - Criteria Pollutants*

This worksheet is primarily for calculating VOC emissions using the material balance method. For applying the material balance method to sulfur-containing fuels, use worksheet 6. Skip this worksheet if it is not applicable.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

In column A, enter the applicable criteria pollutant(s). Enter the total quantity of pollutant that enters the process or operation (Q_added) in column B. Enter the total quantity of pollutant that becomes an integral part of the product (Q_consumed) in column C. In column D, enter the total quantity of the pollutant recovered for reuse (Q_recovered). Subtract Q_consumed and Q_recovered from Q_added to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions in pounds by 2,000 to obtain the uncontrolled emissions in tons, and enter in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7, and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total estimated emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E E = B - C - D	Column F F = E/2,000	Column G	Column H H = F x G
Criteria Pollutant	Q_added (lbs)	Q_consumed (lbs)	Q_recovered (lbs)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}-FIL, $PM_{2.5}$-FIL, PM-CON, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Material Balance Method Calculation Form - Fuels Containing Sulfur

This worksheet is for calculating SO_x emissions using the material balance method. Skip this worksheet if it is not applicable.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

In column B, enter the quantity of sulfur-containing fuel (F_burned). Enter the percent sulfur by weight of the fuel in column C. For the conversion factor in column D, enter 1.95 for coal or 2.00 for fuels other than coal. Multiply F_burned by the percent sulfur by weight and the conversion factor to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions by 2,000 to obtain uncontrolled emissions in tons, and enter in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total SO_x emissions to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E E = B x C x D	Column F F = E/2,000	Column G	Column H H = F x G
Criteria Pollutant	F_burned (lbs)	% Sulfur / 100	Conversion Factor (1.95 for coal, 2.0 for other fuels)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
						Total Emissions	

Overall Control Efficiency - Criteria Pollutants and HAPs

Please use a separate worksheet for each air pollution control system. You may skip this worksheet if it is not applicable.

Enter the point ID and SCC ID numbers.

Point ID Number			SCC ID Number(s)	

Briefly describe the air pollutant control system:

Enter the pollutant(s) in column A. In column B, enter the capture efficiency (CE) for each pollutant as a percentage. In column C, enter the control device efficiency (CDE) for each unit as a percentage. Calculate the overall control efficiency (OCE) as follows: OCE = (CE x CDE) / 10,000. Enter the OCE in column D. Subtract the OCE from 1.0 and enter the result in column E. Transfer the quantity 1 - OCE from column E to column G on worksheets 3, 5, 6, 9 and 10 as applicable for each pollutant.

Column A	Column B	Column C	Column D D = (B x C) / 10,000	Column E	
Pollutant	**Capture Efficiency (CE) (%)**	**Control Device Efficiency (CDE) (%)***	**Overall Control Efficiency (OCE)** **OCE = (CE x CDE) / 10,000**	**1 - OCE**	**Internal Use Only**

* For efficient PM control devices, emissions exiting the control device can be assumed to be 100% PM_{10}. For this scenario, TSP factors and control efficiencies can be used to estimate PM_{10}.

Emissions Summary - Criteria Pollutants*

Enter the point ID numbers from all worksheet 1s into the column headers across the top row. Transfer the emissions in tons for each point ID number for the applicable criteria pollutants from worksheets 3, 5 and 6. For worksheets 3 and 5, you'll transfer the results from column H. For worksheet 6, you'll transfer the results from the total emissions box. If more than one emissions calculation worksheet was used for a point ID number, sum the emissions for each pollutant for that point ID number before entering the information on this worksheet. Sum the emissions for each pollutant, and enter in either the subtotal column (if more than one worksheet 8 is used) or the total column.

Transfer the results for NO_x, VOC, PM_{10} and SO_x from the total column to the corresponding pollutants in boxes 1 through 4 on the fee calculation worksheet 13. (Because fees are not paid on $PM_{2.5}$, NH_3 or CO, these emissions totals do not need to be transferred to worksheet 13.)

	Criteria Emissions by Point ID Number _Insert point ID numbers in column headings below. For each point ID number, enter the emissions sum for each applicable pollutant._										Subtotal (tons) _if using more than one worksheet 8_	Total (tons)	Internal Use Only
Point ID Number													
NO_x Emissions (tons)													
VOC Emissions (tons)													
PM_{10}-FIL Emissions (tons)													
$PM_{2.5}$-FIL Emissions (tons)													
PM-CON Emissions (tons)													
NH_3 Emissions (tons)													
SO_x Emissions (tons)													
CO Emissions (tons)													

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}-FIL, $PM_{2.5}$-FIL, PM-CON, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Source ID Number: _____

Emission Factor Method Calculation Form - Hazardous Air Pollutants (HAPs)

This worksheet is for calculating HAP emissions using emission factors. If you are not using emission factors to calculate HAP emissions, skip this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

Calculate emissions for all HAPs, even if included in previous criteria pollutant emissions calculations. List the HAPs and their CAS numbers in column A. Enter the source of the emission factor in column B and the emission factor in column C. Be sure that each emission factor is given in pounds per unit of measurement. Transfer the operating rates from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions, pollutant by pollutant, from column H to column D on worksheet 11 using the same point identification number that was used on this worksheet.

Column A		Column B	Column C	Column D	Column E $E = C \times D$	Column F $F = E/2{,}000$	Column G	Column H $H = F \times G$	
HAPs		**Emission Factor Origin (If use AP-42 list table number)**	**Emission Factor (lbs per unit of measurement)**	**Operating Rate (in units of measurement)**	**Uncontrolled Emissions (lbs)**	**Uncontrolled Emissions (tons)**	**1 - Overall Control Efficiency (1 - OCE)**	**Estimated Emissions (tons)**	**Internal Use Only**
Name	**CAS#**								

Material Balance Calculation Form - Hazardous Air Pollutants (HAPs)

This worksheet is for calculating HAP emissions using the material balance method. If you are not using material balance to calculate HAP emissions, skip this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

Calculate emissions for all HAPs, even if included in previous criteria pollutant emissions calculations. In column A, enter the HAPs and CAS numbers. Enter the total quantity of the HAP that enters the process or operation (Q_added) in column B. Enter the total quantity of the HAP that becomes an integral part of the product (Q_consumed) in column C. In column D, enter the total quantity of the pollutant recovered for reuse (Q_recovered). Subtract Q_consumed and Q_recovered from Q_added to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions in pounds by 2,000 to obtain the uncontrolled emissions in tons, and enter in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7, and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total emissions, pollutant by pollutant, from column H to column D on worksheet 11 using the same point identification number that was used on this worksheet.

Column A		Column B	Column C	Column D	Column E $E = B - C - D$	Column F $F = E/2,000$	Column G	Column H $H = F \times G$	
HAPs		**Q_added (lbs)**	**Q_consumed (lbs)**	**Q_recovered (lbs)**	**Uncontrolled Emissions (lbs)**	**Uncontrolled Emissions (tons)**	**1 - Overall Control Efficiency (1 - OCE)**	**Estimated Emissions (tons)**	**Internal Use Only**
Name	**CAS#**								

Source ID Number: _____

Emissions Summary - Hazardous Air Pollutants (HAPs)

List the HAPs and CAS numbers in columns A and B. Enter the point ID numbers in column C. Transfer the annual emissions for each HAP for each point ID number from column H on worksheets 9 and 10 to column D on this worksheet. Sum the values in column D to obtain total HAP emissions in tons and enter in either the subtotal box (if more than one worksheet 11 is used) or the total box. For all HAPs that are considered PM10, enter the HAP emissions for the point in column E in addition to column D. For all HAPs that are considered VOC, enter the HAP emissions for the point in column F in addition to column D.

Transfer the total of column D to line 1 on worksheet 12 and box 5 on worksheet 13. The information in columns E and F is used in worksheet 12.

Column A	Column B	Column C	Column D	Column E	Column F	
HAP	CAS Number	Point ID Number	HAP Emissions by Point ID Number (tons)	PM10 HAP Emissions (tons)	VOC HAP Emissions (tons)	Internal Use Only
	Subtotals of Columns D, E and F *(if using more than one worksheet 11)*					
	Totals of Columns D, E and F					

Worksheet to Determine if HAP Emissions Are Subject to Fees

This worksheet was designed to ensure that you don't pay twice for any HAP emissions that you are already paying for as part of your PM_{10} and/or VOC fees. You may skip this worksheet and move on to worksheet 13 if your facility does not emit any HAPs.

Line 1 Enter the sum of the totals of column D from all worksheet 11s.　　　[　　　　　] tons/yr

Line 2 Enter the sum of the totals of columns E and F from all worksheet 11s. Enter zero if there are no HAPs in columns E and F on worksheet 11.　　　[　　　　　] tons/yr

Line 3 Subtract line 2 from line 1 and round to the nearest ton. Transfer this result to Box 10 on Worksheet 13.　　　[　　　　　] tons/yr

Emissions Summary and Fee Calculation

For the criteria pollutants, transfer the results from the total column on worksheet 8 to boxes 1 through 4. Note that $PM_{2.5}$, NH_3 and CO emissions are not carried forward to this worksheet because fees are not paid on these pollutants. For HAPs, transfer the total of column D from worksheet 11 (or line 1 on worksheet 12) to box 5 and the results from line 3 on worksheet 12 to box 10.

IMPORTANT NOTE ABOUT ROUNDING - Total facility-wide emissions should be rounded to the nearest ton for the facility-wide emissions summary in boxes 1 - 5.

Facility-Wide Emissions Summary

Round facility-wide emissions to the nearest ton before entering into boxes 1 - 5.

Total Facility-Wide NO_x Emissions (tons/year) — Box 1

Total Facility-Wide VOC Emissions (tons/year) — Box 2

Total Facility-Wide (PM_{10}-FIL $_+$ PM-CON) Emissions (tons/year) — Box 3

Total Facility-Wide SO_x Emissions (tons/year) — Box 4

Total Facility-Wide HAP Emissions (tons/year) — Box 5

Emissions Fee Determination

NOx Emissions Subject to Fees
If box 1 > 4,000 tons, enter 4,000. Otherwise, enter box 1. — Box 6

VOC Emissions Subject to Fees
If box 2 > 4,000 tons, enter 4,000. Otherwise, enter box 2. — Box 7

(PM_{10}-FIL $_+$ PM-CON) Emissions Subject to Fees
If box 3 > 4,000 tons, enter 4,000. Otherwise, enter box 3. — Box 8

SO_x Emissions Subject to Fees
If box 4 > 4,000 tons, enter 4,000. Otherwise, enter box 4. — Box 9

HAP Emissions Subject to Fees
Enter results from line 3, worksheet 12. — Box 10

Sum of boxes 6 - 10. This is the total quantity of emissions subject to fees. — Box 11

Multiply box 11 by $37/ton and enter the result. — Box 12

Enter your fee credit carried over from previous years. Enter 0 or leave blank if no fee credit applies. — Box 13

Subtract box 13 from box 12 and enter the result. This is the emissions fee due. — Box 14